

Serial No. 09/923,477

PATENT
Docket No. 58027-010400**CLAIM AMENDMENTS**

Claim 1 (original): A micro mixer having at least one means of creating a time-varying force field for inducing homogenization of a first and second sample component within a micro mixer channel at a rate greater than that of diffusion alone, and wherein the time-varying force field creates a transverse force upon a sample interface between the first and second sample component.

Claim 2 (original): A micro mixer of claim 1, wherein the time-varying force field used to generate a transverse force on a first sample component and a second sample component separated by a sample interface is at least one of a physical displacement field, electrical field, pressure field, or a magnetic field.

Claim 3 (cancelled)

Claim 4 (cancelled)

Claim 5 (original): The micro mixer of claim 2 wherein the electrical field is created by an AC or a DC source.

Claim 6 (original): A micro mixer of claim 5, wherein the electrical field creates a transverse force using at least one electrode adjacent to the micro mixer channel, and wherein the electrode is activated to a selected first voltage and subsequently modulated to a second selected voltage at a selected interval to induce electrokinetic perturbations in the sample interface.

Claim 7 (original): A micro mixer of claim 6, wherein the second selected voltage is zero volts.

Claim 8 (original): A micro mixer of claim 5, wherein the electrical field creates a transverse force using at least one electrode adjacent to the micro mixer channel, wherein the electrode is activated to a first selected frequency and subsequently modulated to a second selected frequency to induce electrokinetic perturbations in the sample interface.

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Claim 9 (original): A micro mixer of claim 5, wherein the electrical field creates a transverse force by application of at least a first voltage at a first frequency by a first electrode and application of at least a second voltage at a second frequency by a second electrode, and wherein the first voltage and/or first frequency of the first electrode is modulated at a selected interval, and wherein the second voltage and/or second frequency of the second electrode is not modulated.

Claim 10 (original): A micro mixer of claim 5, wherein the electrical field creates a transverse force by alternate application of a at least first voltage at a first frequency between a pair of electrodes and a second voltage at a second frequency between the pair of electrodes.

Claim 11 (original): A micro mixer of claim 5, wherein the electrical field creates a transverse force by alternate application of a at least first voltage between a first pair of electrodes and a second voltage between a second pair of electrodes.

Claim 12 (original): A micro mixer of claim 5, wherein the electrical field creates a transverse force by alternate application of a at least first voltage at a first frequency between a first pair of electrodes and a second voltage at a second frequency between a second pair of electrodes.

Claim 13 (cancelled)

Claim 14 (cancelled)

Claim 15 (cancelled)

Claim 16 (cancelled)

Claim 17 (cancelled)

Claim 18 (original): A micro mixer of claim 2, wherein the transverse force is at an angle of 90° to the sample interface.

Claim 19 (original): A micro mixer of claim 2, wherein the transverse force is at an angle of less than 90° to the sample interface.

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Claim 20 (original): A micro mixer of claim 1, wherein the micro mixer is open chambered.

Claim 21 (original): A micro mixer of claim 1, wherein the micro mixer is close chambered.

Claim 22 (original): A microdevice comprising a micro mixer having at least one means of creating a time-varying force field for inducing homogenization of sample components within a micro mixer channel at a rate greater than that of diffusion alone.

Claim 23 (original): A method of inducing sample mixing utilizing a micro mixer having at least one means of creating a time-varying force field for inducing homogenization of sample components within a micro mixer channel at a rate greater than that of diffusion alone.

Claim 24 (new): A micro mixer having at least one means of creating a time-varying electrical field for inducing homogenization of a first and second sample component within a micro mixer channel at a rate greater than that of diffusion alone, and wherein the time-varying force field creates a transverse force upon a sample interface between the first and second sample component;

wherein the electrical field creates a transverse force using at least one electrode inside the micro mixer channel, and wherein the electrode is activated to a selected first voltage and subsequently modulated to a second selected voltage at a selected interval to induce electrokinetic perturbations in the sample interface.

Claim 25 (new): A micro mixer having at least one means of creating a time-varying electrical field for inducing homogenization of a first and second sample component within a micro mixer channel at a rate greater than that of diffusion alone, and wherein the time-varying electrical field creates a transverse force upon a sample interface between the first and second sample component;

wherein the time-varying electrical field creates a transverse force by application of at least a first voltage at a first frequency by a first electrode and application of at least a second voltage at a second frequency by a second electrode, and wherein the first voltage and/or first frequency of the first electrode is modulated at a selected interval, and wherein the second voltage and/or second frequency of the second electrode is not modulated;

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wherein the first and the second electrodes are positioned inside the channel to induce a folding and stretching effect on an interface between the first and the second sample components.